

ALEXANDER B. RUDIN

E-MAIL: alexander.b.rudin@gmail.com | CELL: (703) 362 -3057 | PORTFOLIO: www.alexanderrudin.com

OBJECTIVE

Highly motivated mechanical engineering graduate student seeking a role in industry to develop the next wave of critical cyber-physical and automated systems by utilizing my joint mechanical engineering and computer science background, and my experience working in and managing a variety of project environments.

EDUCATION

University of Virginia, School of Engineering and Applied Science Charlottesville, VA
Masters of Engineering in Mechanical Engineering Concentration: Cyber-Physical Systems Expected May 2021
B.S. with Highest Distinction in Mechanical Engineering Minor: Computer Science May 2020

- **Cumulative GPA: 3.89**

EXPERIENCE

Perrone Robotics, Inc. – Mechanical Engineering Intern – Crozet, VA August 2020 – Present

- Sourced components and used SolidWorks and Fusion360 to model custom componentry for retrofit mounting hardware
- Analyzed past test drive data for errors using an in-house simulator and promoted solutions to encountered problems
- Built out and tested hardware on vehicle to meet production deadlines

Metallum3D, Inc. – Mechanical Engineer – Charlottesville, VA March 2020 – July 2020

- Led system integration efforts between HMI, control systems, and embedded software for FDM and Binder-Jetting 3D printer post-processing furnace system
- Developed a Fuzzy Logic temperature control algorithm in Python and rebuilt in Arduino for production which reduced RMSE by 2 degrees over previous PID system
- Used Arduino with Nextion and MegunoLink GUI libraries to develop an integrated HMI for the furnace system

Zeta Associates, Inc. – Software Development Intern – Fairfax, VA May – August 2019

- Scheduled, divided work, and planned weekly workflow for team of 3 interns to substantially complete project during 10-week internship
- Used Python to develop, test, and benchmark production-level code for a digital signal processing algorithm
- Utilized CUDA library with NVIDIA GPUs to reduce runtime by 3x over single CPU runtime
- Generated ICD for the project to clarify use cases and procedure as well as to ease transition process

Clark Construction Group, LLC – Research & Development Intern – Bethesda, MD May – August 2018

- Used pug and node.js to implement an interface used by project teams to automate sending requisitions and Release of Liens to subcontractors to save Jobsite Superintendents 20 hours of work per month
- Used HTML/CSS/JavaScript to develop a series of maps for displaying and manipulating pertinent jobsite and material yard data to improve project scheduling and material shipping
- Utilized Excel, d3.js and Google Data Studio to create project dashboards for update meetings with clients

Windpact, Inc. – Engineering and Design Intern – Leesburg, VA May 2017 – January 2018

- Developed CAD models in Solidworks for vacuum form molds and CNC machined the molds on a ShopBot using VCarve CAM software
- Analyzed foam and pad prototypes throughout testing process from foam hardness testing to drop testing to full-helmet headform testing for NOCSAE standards
- Designed and generated BOM of drop test system for in-house testing
- Used Excel to develop Cost Calculator for pad prototypes in order to hold discussions with possible clients

PROJECTS

Magnetically-Actuated Ferrofluid Clock – Capstone MAE 4610/4620 August – December 2019

- Maintained Gantt Chart for project scheduling and adjusted weekly tasks to complete project in 3-month timeframe
- Used Parallax microcontroller with mechatronic servomotor system and Parallax LCD screen to implement user interface
- Designed, built, and tested numerous prototypes utilizing Solidworks and Catalyst software with FDM 3D printers and laser cutters

Machine Learning Analysis of Fish Habitat Degradation in Virginia – CS 4774 December 2019

- Selected and tuned machine learning models to achieve a 25% accuracy increase over standard linear regressor model

- Conducted Random Forest, Decision Tree, K-means Clustering, and Neural Network models on fish habitat degradation data to determine the best model and make claims about feature importance
- Managed project tasks and schedule for a 3-person team in order to complete work in 1-month timeframe

Two-Axis Pen Printer – MAE 4710

April 2019

- Controlled stepper motor, servo motor, and DC Brush motor with Parallax Propeller microcontroller to create 2D drawings based on digital images converted to G code
- Adjusted PWM for Brush motor to allow for angled lines and curves, in addition to X and Y axis motion

SKILLS

Arduino, Autodesk Fusion360, Certified Solidworks Associate (CSWA), MATLAB, ROS
C++, Python, Java, HTML/CSS/JavaScript, Scikit-Learn, WEKA, PyTorch, Microsoft Office Suite
Critical Thinking, Leadership, Problem Solving, Project Scheduling, Written Communication

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

UVa ULink Peer Advising , <i>Adviser</i>	August 2017 – May 2020
UVa Club Ultimate Frisbee , <i>VP</i> (2018 – 2019), <i>Captain</i> (2019 – 2020)	August 2016 – May 2020
UVa Jazz Ensemble	August 2016 – May 2019

AWARDS

Pi Tau Sigma Mechanical Engineering Honor Society	September 2018 – present
Tau Beta Pi Engineering Honor Society	October 2018 – present
UVa Intermediate Honors Recipient (top 20% of engineering school class)	October 2018
Finalist for UVa Entrepreneurship Cup Concept Competition	November 2016